

REMARKS/ARGUMENTS

This Amendment is being filed in response to the Final Office Action dated August 6, 2008. Reconsideration and allowance of the application in view of the amendments made above and the remarks to follow are respectfully requested.

Claims 1-20 are currently pending in the Application. Claims 1 and 11 are independent claims.

In the Final Office Action, the Amendment submitted on May 5, 2008 is objected to because it is alleged that the Amendment introduced new matter into the disclosure. The alleged new matter was provided in claim 12 which recites in pertinent part "wherein the aqueous surfactant solution is selected to bond to broken substrate bonds in the micro-crack." This objection to the disclosure is respectfully traversed. It is respectfully submitted that the disclosure as filed provides ample support for this claim recitation. For example, the abstract makes clear that (emphasis added) "The invention relates to a method of breaking a substrate of a brittle material, the method comprising the steps of ... moving the laser beam and the substrate with respect to each other to create a line of heated spots on the substrate (2), cooling the heated spots on the substrate by locally applying a cooling medium

(4) behind the heated spots such that a micro-crack is propagated in the line of heated spots, ... wherein, the cooling medium comprises an aqueous surfactant solution. The surfactants will connect to the broken siloxane bonds inside the surface cracks."

The present application on page 2, lines 1-11 makes clear that (emphasis added) "the method according to the invention is characterized in that the cooling medium comprises an aqueous surfactant solution. The inventors have realized that the increase of the breaking load in the conventional process is due to locking or even healing of the micro-cracks. However, if the cooling medium comprises an aqueous surfactant solution the surfactants will connect to the broken siloxane bonds inside the micro-cracks. Recombination and healing of the broken siloxane bonds will not occur and the required breaking load will remain constant over time. Furthermore, the surfactants will change (i.e. lower) the surface energy of the cracks. Consequently, the cracks will be kept open and the load needed to open the cracks will be lowered."

Further the present application recites that (emphasis added) "FIG. 1 is a schematic view from above of an apparatus employing the method according the invention. A spot 3 of a laser beam is focussed on substrate 1 of a brittle material, e.g. glass,

crystalline silica, ceramics or compositions thereof. The energy contained in the laser spot 3 causes local heating of the substrate. A cooling medium from a nozzle 4 in the vicinity of the laser spot 3 (in most cases positioned behind the laser spot) cools the heated spot. This rapid temperature differential causes a thermal shock and causes a pre-existing micro-crack to propagate."

(E.g., see, present patent application, page 2, lines 24-30.)

"CTAB is a compound belonging to the class of cationic surfactants, i.e. a surface active agent, a substance such as a detergent that reduces the surface tension of a liquid. Good results were also obtained with compounds belonging to the classes of non-ionic and anionic surfactants, such as octadecyl deca(ethylenoxide) hydroxide or dodecylbenzene sulfonic acid sodium salt, respectively. All compounds have in common their capability of binding to the broken siloxane bonds ('dangling bonds') inside the micro-cracks." (E.g., see, present patent application, page 3, lines 23-28.)

As should be clear from the above discussion regarding the original disclosure of the present patent application, there is more than ample support for the claim 12 recitation of "wherein the aqueous surfactant solution is selected to bond to broken substrate

bonds in the micro-crack." Accordingly, it is respectfully requested that the objection to the Amendment submitted on May 5, 2008 be withdrawn.

Claims 1-4, 6, 8, 10-15, 17 and 19 are rejected under 35 U.S.C. §103(a) as allegedly unpatentable over U.S. Patent No. 6,211,488 to Hoekstra ("Hoekstra") in view of U.S. Patent No. 6,673,752 to Bookbinder ("Bookbinder"). Claims 5, 7, 9, 16, 18 and 20 are rejected under 35 U.S.C. § 103 as allegedly unpatentable over Hoekstra and Bookbinder in view of U.S. Patent No. 5,565,363 to Iwata ("Iwata"). These rejections are respectfully traversed. It is respectfully submitted that claims 1-20 are allowable over Hoekstra in view of Bookbinder alone, and in view of Iwata for at least the following reasons.

Hoekstra discloses (emphasis added) "[a]n apparatus and method for physically separating non-metallic substrates [that] forms a microcrack in the substrate and controllingly propagates the microcrack. An initial mechanical or pulsed laser scribing device forms a microcrack in the substrate. If a pulsed laser is used, it forms a crack inside the substrate that does not extend to either the upper or lower surface." (See, Hoekstra, abstract.)

As taught by Hoekstra, (emphasis added) "[a] power control 36 is coupled to the controller 40 and to the laser 34 so that the laser 34 can be pulsed at desired times. A Z-drive 38 permits the vertical adjustment of the lens 35 so that the focal point 37 of the laser 34 may be vertically positioned within the substrate 4 as desired. In a preferred arrangement, the focal point of the pulsed laser is within the thickness of the substrate 4, slightly below the upper face of the substrate 4. For example, for a glass sheet having a thickness of approximately 1 mm, the focal point should be 5-50% or 0.05-0.50 mm, from the upper surface, preferably about 0.1 mm. However, the preferred depth of the focal point may depend on the thickness of the substrate to be split." (See, Hoekstra, FIG. 4 and the accompanying description contained in Col. 5, lines 49-61.) As clear from Hoekstra, the applied laser is focused within the substrate.

Further, it is respectfully submitted that for the above rejection, the Office Action cites a motivation to make a combination of references that finds no support in the cited references.

With regard to the rejection of claims 1-20 as being obvious from Hoekstra in view of Bookbinder alone, and in view of Iwata,

the Final Office Action states that (emphasis provided) "[i]t would have been obvious to one of ordinary skill in the art at the time of the invention to use the surfactants (cationic, nonionic or anionic) and the surfactant concentration (0.1 to 1.0%) as taught by Bookbinder et al. in the Hoekstra et al. process because coolants and cutting fluids function as one and the same (i.e. interchangeable). Furthermore, both Bookbinder et al. and Hoekstra et al. are directed to the machining of brittle materials." This position is respectfully traversed.

In rejecting claims under 35 U.S.C. § 103, the Examiner bears the initial burden of establishing a **prima facie** case of obviousness. In re Oetiker, 977 F.2d 1443, 1445, 24 USPQ2d 1442, 1444 (Fed. Cir. 1992). See also In re Piasecki, 745 F.2d 1468, 1472, 223 USPQ 785, 788 (Fed. Cir. 1984). The Examiner can satisfy this burden by showing that some objective teaching in the prior art or knowledge generally available to one of ordinary skill in the art suggests the claimed subject matter. In re Fine, 837 F.2d 1071, 1074, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988).

When determining obviousness, "[t]he factual inquiry whether to combine references must be thorough and searching." In re Lee, 277 F.3d 1338, 1343, 61 USPQ 1430, 1433 (Fed. Cir. 2002), citing

McGinley v. Franklin Sports, Inc., 262 F.3d 1339, 1351-52, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). "It must be based on objective evidence of record." *Id.* "Broad conclusory statements regarding the teaching of multiple references, standing alone, are not 'evidence.'" *In re Dembiczak*, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617. "Mere denials and conclusory statements, however, are not sufficient to establish a genuine issue of material fact." *Dembiczak*, 175 F.3d at 1000, 50 USPQ2d at 1617, citing *McElmurry v. Ark. Power & Light Co.*, 995 F.2d 1576, 1578, 27 USPQ2d 1129, 1131 (Fed. Cir. 1993).

The suggestion in the Final Office Action that the combinations of prior art references "would be obvious to one having ordinary skill in the art ..." is respectfully refuted. One may not utilize the teachings of the present application as a road map to pick and choose amongst prior art references for the purposes of attempting to arrive at the presently disclosed invention. The Federal Circuit has identified three possible sources for motivation to combine references including the nature of the problem to be solved, the teachings of the prior art, and the knowledge of persons of ordinary skill in the art. (See, *In re Rouffet*, U. S. Court of Appeals Federal Circuit, U.S.P.Q. 2d, 1453,

1458.) There must be a specific principle that would motivate a skilled artisan, with no knowledge of the present invention, to combine the prior art as suggested in the Office Action. The use of hindsight in the selection of references is forbidden in comprising the case of obviousness. Lacking a motivation to combine references, a proper case of obviousness is not shown (see, *In re Rouffet*, 1458).

The U.S. Court of Appeals for the Federal Circuit (the "Federal Circuit") restated the legal test applicable to rejections under 35 U.S.C. § 103(a) in the *In re Rouffet*, holding. The Court stated:

[V]irtually all [inventions] are combinations of old elements. Therefore an Examiner may often find every element of a claimed invention in the prior art. Furthermore, rejecting patents solely by finding prior art corollaries for the claimed elements would permit an Examiner to use the claimed invention itself as a blueprint for piecing together elements in the prior art to defeat the patentability of the claimed invention. Such an approach would be "an illogical and inappropriate process by which to determine patentability." To prevent the use of hind sight based on the invention to defeat patentability of the invention, this court requires the Examiner to show a motivation to combine the references that create the case of obviousness. The Board [of Appeals] did not, however, explain what specific understanding or technological principle within the knowledge of one of ordinary skill in the art would have suggested the combination. ... To counter this potential weakness in the obviousness construct **the suggestion to**

combine requirements stands as a critical safeguard against hindsight analysis and rote application of the legal test for obviousness.

In re Rouffet, 47 USPQ2d 1457-58 (Fed. Cir., July 15, 1998) (citations omitted, emphasis added).

More recently, the Federal Circuit again dealt with what is required to show a motivation to combine references under 35 U.S.C. § 103(a). In this case the court reversed the decision of the Board of appeals stating:

[R]ather than pointing to specific information in *Holiday* or *Shapiro* that suggest the combination..., the Board instead described in detail the similarities between the *Holiday* and *Shapiro* references and the claimed invention, noting that one reference or the other-in combination with each other... described all of the limitations of the pending claims. Nowhere does the Board particularly identify any suggestion, teaching, or motivation to combine the ... references, nor does the Board make specific-or even inferential-findings concerning the identification of the relevant art, the level of ordinary skill in the art, the nature of the problem to be solved, or any factual findings that might serve to support a proper obviousness analysis.

In re Dembiczak, 50 USPQ2d 1614, 1618 (Fed. Cir., April 28, 1999) (citations omitted).

Thus, from both *In re Rouffet* and *In re Dembiczak* it is clear that the Federal Circuit requires a specific identification of a suggestion, motivation, or teaching why one of ordinary skill in the art would have been motivated to select the references and

combine them.

The Examiner's reasoning for the motivation, namely, that those skilled in the art would have been motivated to combine Hoekstra with Bookbinder, could only have been made with hindsight based on the teachings of the present disclosure. The Examiner's reasoning for the motivation for combining the references is nowhere recognized in the prior art.

Where a feature is not shown or suggested in the prior art references themselves, the Federal Circuit has held that the skill in the art will rarely suffice to show the missing feature. Al-Site Corp. v. VSI International Inc., 174 F.3d 1308, 50 USPQ2d 1161 (Fed. Cir. 1999) (Rarely, however, will the skill in the art component operate to supply missing knowledge or prior art to reach an obviousness judgment).

Thus, Applicants again respectfully submit that the Examiner has used impermissible hindsight to reject claims 1-20 under 35 U.S.C. § 103(a). As discussed above, the Federal Circuit in *In re Rouffet* stated that virtually all inventions are combinations of old elements. Therefore an Examiner may often find every element of a claimed invention in the prior art. To prevent the use of hindsight based on the invention to defeat patentability of the

invention, the Examiner is required to show a motivation to combine the references that create the case of obviousness. Applicants respectfully submit that the Examiner has not met this burden.

The mere fact that the prior art device could be modified so as to produce the claimed device, which in this case even in combination it does not (as discussed in detail above), is not a basis for an obviousness rejection unless the prior art suggested the desirability of the modification. See, In re Gordon, 733 F.2d 900, 902 (Fed. Cir. 1984); and In re Laskowski, 871 F.2d 115, 117 (Fed. Cir. 1989).

How can the Office Action espouse that this reconstruction forwarded does not include knowledge gleamed only from the Applicants disclosure? If this reconstruction did not come from the present application, where did it come from? The above reconstruction certainly did not come from the prior art.

It is respectfully submitted that Bookbinder relates to cutting fluids. Bookbinder's cutting fluids are typically used for cutting by a saw blade (see, Bookbinder, abstract). Bookbinder's cutting fluids are used for cooling the saw blade heated by frictional heat of a workpiece (see, Bookbinder, Col. 2, lines 14-16). Bookbinder's cutting fluids help provide a slippery surface

for the saw blade, but do not act on the workpiece. As shown in FIG. 1 of Bookbinder, the cutting fluid is applied to the cutting blade and not to the material being cut. The organic solution binds to chips that are cut away from the material being cut to keep the particles from clogging the abrading surface of the cutting blade (see, Col. 2, lines 51-61).

On the other hand, Hoekstra relates to laser scribing. Quenching fluids used by Hoekstra directly contribute to scribing a substrate. Namely, the substrate in Hoekstra is scribed by a temperature gap. As stated in Hoekstra, "[t]he temperature differential between the heat affected zone of the substrate and the coolant stream propagates the micro-crack." (See, Hoekstra, abstract.) The temperature gap arises from laser heating and "quenching by the quenching fluids".

It is respectfully submitted that the functions of a quenching fluid used for laser scribing are much different from those required for cutting fluids used for cutting workpieces by a saw blade.

Therefore, it is respectfully submitted that there is no motivation found in the prior art references for the man skilled in the art to use Bookbinder's cutting fluids in place of the

quenching fluids for Hoekstra's laser scribing. In cutting workpieces, small particles are not generated by a laser beam unlike the case of a saw blade. Therefore, there is no teaching contained within either of Hoekstra or Bookbinder of using surfactant for laser scribing.

In consideration of the use of improper hindsight for rendering a claim obvious in light of prior art, the Federal Circuit has stated that "to draw on hindsight knowledge of the patented invention, when the prior art does not contain or suggest that knowledge, is to use the invention as a template for its own reconstruction - an illogical and inappropriate process by which to determine patentability." (Sensonics, Inc. v. Aerosonic Corp., 81 F.3d 1566, 38 USPQ2d 1551 (Fed. Cir. 1996). "To imbue one of ordinary skill in the art with knowledge of the invention ensued, when no prior art reference or references of record convey or suggest that knowledge, is to fall victim to the insidious effect of a hindsight syndrome wherein that which only the inventor taught is used against its teacher." (In re Zurko, 111 F.3d 887, 42 USPQ2d 1476 (Fed. Cir. 1997). "A critical step in analyzing the patentability of claims pursuant to section 103(a) is casting the mind back to the time of invention, to consider the thinking of one

of ordinary skill in the art, guided only by the prior art references and the then-accepted wisdom in the field (cited reference omitted). Close adherence to this methodology is especially important in cases where the very ease with which the invention can be understood may prompt one 'to fall victim to the insidious effect of a hindsight syndrome wherein that which only the invention taught is used against its teacher (cited references omitted).'" (In re Kotzab, 208 F.3d 1352, 54 USPQ2d 1308 (Fed. Cir. 2000)).

Applicants would like to bring to the Examiner's attention well established case law that clearly shows that the court frowns on such use of hindsight, examples of such cases being as follows:

It is stated in In re Sernaker, 217 U.S.P.Q. 1, 6 (C.A.F.C. 1983): "prior art references in combination do not make an invention obvious unless something in the prior art references would suggest the advantage to be derived from combining their teachings."

It is clear that the suggestion to combine references should not come from Applicants, as was forcefully stated in Orthopedic Equipment Co. v United States, 217 U.S.P.Q. 193, 199 (C.A.F.C. 1983): "It is wrong to use the patent in suit [here the

application] as a guide through the maze of prior art references, combining the right references in the right way to achieve the result of the claims in suit [here the claims pending]. Monday morning quarterbacking is quite improper when resolving the question of nonobviousness in a court of law [here the PTO]."

Also, the case law is clear in guarding against the use of hindsight in reading Applicants invention into the prior art, which art is clearly not disclosing the Applicants invention as claimed. Applicants would like to bring the following cases to the Examiner's attention:

The Supreme Court in *Calmar, Inc. v. Cook Chemical Co.*, 383 U.S. 1, 86 S.Ct. 684, 15 L.Ed.2d 545 (1966), in which the Court warns the dangers of "slipping into hindsight", citing the case of *Monroe Auto Equipment Co. v. Heckethorn Mfg. & Supply Co.*, 332 F.2d 406, 141 U.S.P.Q. 549 (6th Cir., 1964), where the doctrine is stated (emphasis provided):

We now come to the patented device which after all is the subject matter of this case. At the outset we take note of two well-established principles. The first is that in considering the questions of obviousness, we must view the prior art from the point in time prior to when the patented device was made. Many things may seem obvious after they have been made and for this reason courts should guard against slipping into use of hindsight. We must be careful to

"view the prior art without reading into that art the teachings of appellant's invention." Application of Sporck, 301 F.2d 686, 689 (C.C.P.A).

The courts have long held that there must be some teaching in the references cited to suggest the combination of the references in a manner to obtain the combination of elements of the rejected claim(s). It is well known that in order for any prior art references themselves to be validly combined for use in a prior-art § 103 rejection, the references themselves, or some other prior art, must suggest that they be combined. For example:

The Board has stated in Ex parte Levengood, 28 USPQ 2d 1300 (PTOBA&I 1993):

In order to establish prima facie case of obviousness, it is necessary for the examiner to present evidence, preferably in the form of some teaching, suggestion, incentive or inference in the applied prior art, or in the form of generally available knowledge, that one having ordinary skill in the art would have been led to combine the relevant teachings of the applied references in the proposed manner to arrive at the claimed invention. ... That which is within the capabilities of one skilled in the art is not synonymous with obviousness ... That one can reconstruct and/or explain the theoretical mechanism of an invention by means of logic and sound scientific reasoning does not afford the basis for an obviousness conclusion unless that logic and reasoning also supplies sufficient impetus to have led one of ordinary skill in the art to combine the teachings of the references to make the claimed invention ... Our reviewing courts have often advised the Patent and

Trademark Office that it can satisfy the burden establishing a prima facie case of obviousness only by showing some objective teaching in either the prior art, or knowledge generally available to one of ordinary skill in the art, that 'would lead' that individual 'to combine the relevant teachings of the references which describe various aspects of a patent applicant's invention without also providing evidence of a motivating force which would impel one skilled in the art to do what the patent applicant has done.

As was further stated in *Uniroyal, Inc. v Rudkin-Wiley Corp.*, 5 U.S.P.Q.2d 1434 (C.A.F.C. 1988), "where prior art references require selective combination by the court to render obvious a subsequent invention, there must be some reason for the combination other than hindsight gleamed from the invention itself ... Something in the prior art must suggest the desirability and thus the obviousness of making the combination."

The Applicants respectfully maintain that there is no suggestions in the prior art references to make the combinations in the manner proposed by the Examiner to achieve the Applicants claimed invention.

The Examiner is requested to consider MPEP 2143, wherein it is stated:

THE PRIOR ART MUST SUGGEST THE DESIRABILITY OF THE CLAIMED INVENTION ... The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in

applicant's disclosure. In re Vaeck, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)." And, "FACT THAT REFERENCES CAN BE COMBINED OR MODIFIED IS NOT SUFFICIENT TO ESTABLISH PRIMA FACIE OBVIOUSNESS ... The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)... Although a prior art device "may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so." 916 F.2d at 682, 16 USPQ2d at 1432.).

It is respectfully submitted that in light of the state of the law as set forth by the Federal Circuit and the lack motivation to combine the cited references, that none of the suggested combinations of prior art utilized to reject each of claims 1-20 finds proper motivation for combination. Further, since the Final Office Action acknowledges that neither of Hoekstra and Bookbinder alone shows the claimed features, it is respectfully requested that claims 1-20 be allowed and an indication to that effect is respectfully requested.

Further, it is respectfully submitted that even in combination Hoekstra in view of Bookbinder does not disclose or suggest the inventive features of the claims.

Accordingly, the method of claim 1 is not anticipated or made obvious by the teachings of Hoekstra in view of Bookbinder. For

example, Hoekstra in view of Bookbinder does not disclose or suggest, a method that amongst other patentable elements, comprises (illustrative emphasis provided) "providing a substrate of a brittle material, focusing a laser beam on an exposed surface of the substrate to heat the exposed surface of the substrate with the laser beam to create a heated spot on the exposed surface of the substrate, moving the laser beam and the substrate with respect to each other to create a line of heated spots on the exposed surface of the substrate, cooling the heated spots on the substrate by locally applying a cooling medium such that a micro-crack in the line of heated spots is propagated on the exposed surface of the substrate, and breaking the substrate along the line of the propagated micro-crack by applying a force on the substrate" as recited in claim 1, and as similarly recited in claim 11.

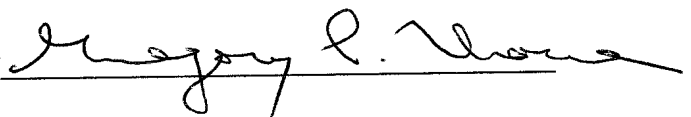
Clearly in Hoekstra, the laser beam is focused below the surface of the substrate. Bookbinder is cited for allegedly showing use of a surfactant and as such, does nothing to cure the deficiencies in Hoekstra. Iwata is cited in rejecting dependent claims and as such, also does nothing to cure the deficiencies in each of Hoekstra and Bookbinder.

Based on the foregoing, the Applicants respectfully submit that independent claims 1 and 11 are patentable over Hoekstra in view of Bookbinder and notice to this effect is earnestly solicited. Claims 2-10, 12-20 respectively depend from one of claims 1 and 11 and accordingly are allowable for at least this reason as well as for the separately patentable elements contained in each of the claims. Accordingly, separate consideration of each of the dependent claims is respectfully requested.

In addition, Applicants deny any statement, position or averment of the Examiner that is not specifically addressed by the foregoing argument and response. Any rejections and/or points of argument not addressed would appear to be moot in view of the presented remarks. However, the Applicants reserve the right to submit further arguments in support of the above stated position, should that become necessary. No arguments are waived and none of the Examiner's statements are conceded.

Applicants have made a diligent and sincere effort to place this application in condition for immediate allowance and notice to this effect is earnestly solicited.

Respectfully submitted,

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